

Idaho National Laboratory Integrated Safety Management System FY 2013 Effectiveness Review and Declaration Report

December 2013



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Idaho National Laboratory Integrated Safety Management System FY 2013 Effectiveness Review and Declaration Report

December 2013

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Idaho Falls, Idaho 83415**

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Idaho National Laboratory Integrated Safety Management System (ISMS) Assessment Review and Recommendation Report

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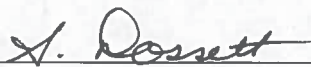
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EXECUTIVE SUMMARY

Idaho National Laboratory (INL) performed an Annual Effectiveness Review of the Integrated Safety Management System (ISMS), per 48 Code of Federal Regulations (CFR) 970.5223-1, "Integration of Environment, Safety and Health into Work Planning and Execution." The annual review assessed Integrated Safety Management (ISM) effectiveness, provided feedback to maintain system integrity, and identified target areas for focused improvements and assessments for Fiscal Year (FY) 2014.

Results of the FY 2013 annual effectiveness review demonstrate that the INL's ISMS program is "Effective" and continually improving and shows signs of being significantly strengthened. Although there have been unacceptable serious events in the past, there has also been significant attention, dedication, and resources focused on improvement, lessons learned and future prevention. BEA's strategy of focusing on these improvements includes extensive action and improvement plans that include PLN-4030, "INL Sustained Operational Improvement Plan, PLN-4058, "MFC Strategic Excellence Plan," PLN-4141, "ATR Sustained Excellence Plan," and PLN-4145, "Radiological Control Road to Excellence," and the development of LWP-20000, "Conduct of Research." As a result of these action plans, coupled with other assurance activities and metrics, significant improvement in operational performance, organizational competence, management oversight and a reduction in the number of operational events is being realized. Examples include:

- Continued decreasing injury and illness rates
- Reduced RadCon incidents and exposures
- Reduced frequency and significance of Initial Notification Reports (INR's)
- Increased Management presence in the field
- Improved expectations of Roles, Responsibilities, Authorities, and Accountabilities.
- Improved work packages, work control processes, and conduct of operations and maintenance
- Improved employee involvement and safety culture
- Improved trending capabilities
- Improved training activities

Conclusion-INL actions performed in FY 2013 have driven immediate improvement in some cases, and have long-range goals of continual improvement. BEA strongly supports ISMS functions and principles and is committed to continual improvement.

Overall Performance Rating – *Effective, Continually Improving*

EXECUTIVE SUMMARY

The purpose of this study was to investigate the effects of a 12-week intervention on the physical and psychological health of individuals with chronic pain. The study was conducted in a controlled setting, and the results were compared to a control group. The intervention group showed significant improvements in physical health, including increased physical activity and reduced pain levels. Additionally, the intervention group showed improvements in psychological health, including reduced anxiety and depression. The results of this study suggest that a 12-week intervention can effectively improve the physical and psychological health of individuals with chronic pain. The study was conducted in a controlled setting, and the results were compared to a control group. The intervention group showed significant improvements in physical health, including increased physical activity and reduced pain levels. Additionally, the intervention group showed improvements in psychological health, including reduced anxiety and depression. The results of this study suggest that a 12-week intervention can effectively improve the physical and psychological health of individuals with chronic pain.

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ACRONYMS

ALARA	As Low As Reasonably Achievable
ATR	Advanced Test Reactor
BEA	Battelle Energy Alliance, LLC
BMP	Best Management Practice
CAP	Corrective Action Plan
CARB	Corrective Action Review Board
CAS	Contractor Assurance System
CCIM	Cold Crucible Induction Melter
CFA	Central Facilities Area
CFR	Code of Federal Regulations
CLPIC	Critical Lift Person in Charge
CoR	Conduct of Research
CoRT	Conduct of Research Training Program
CSE	Criticality Safety Evaluation
DART	Day Away, Restricted or Transferred
DEAR	DOE Acquisition Regulation
DEQ	Department of Environmental Quality
DLA	Dynamic Learning Activities
DLD	Deputy Laboratory Director
DOE	Department of Energy
DOE-ID	Department of Energy Idaho Operations Office
DO-IT	Define, Observe, Intervene, and Test
DOORS	Dynamic Object-Oriented Requirements System
E&E	Energy and Environment
eCR	Electronic Change Request
EDMS	Electronic Document Management System
EFCOG	Energy Facility Contractors Group
EMS	Environmental Management System
EngMS	Engineering Management System
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
EPRI	Electric Power Research Institute
ES&H	Environment, Safety, and Health
ES&S	Environmental Support & Services
EST	Employee Safety Team
F&SS	Facilities and Site Services

FEC	Federal Electronics Challenge
FMS	Financial Management System
FY	Fiscal Year
HaRPS	Hazard and Risk Planning System
HC	Hazard Category
HFEF	Hot Fuel Examination Facility
HPI	Human Performance Improvement
HPT	Health Physics Technician
HSS	Health, Safety and Security
IAS	Independent Assessment System
ICAMS	INL Corrective Action Management System
INL	Idaho National Laboratory
INPO	Institute of Nuclear Power Operations
INTEC	Idaho Nuclear Technology and Engineering Center
IOPAC	Integrated Operational Performance Analysis Committee
IPA	Integrated Performance Assessment
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
JON	Judgment of Need
LDRD	Laboratory Directed Research and Development
LEST	Laboratory Employee Safety Team
LMT	Leadership Management Team
LO/TO	Lockout/Tagout
MAPOC	Mission Area Point of Contact
MFC	Materials and Fuels Complex
MHD-E3	Magneto Hydro Dynamic
MOP	Management Observation Program
MRC	Management Review Committee
MRM	Management Review Meeting
MS	Management Systems
MSL	Management System Lead
N&HS	National and Homeland Security
NCS	Nuclear Safety Culture
NRC	Nonconformance Reporting
NSRB	Nuclear Safety Review Board
OE	Operating Experience
OFI	Opportunity for Improvement
ONORE	Office of Nuclear Operations and Radiological Control Excellence

ORPS	Occurrence Reporting and Processing System
OSHA	Occupational Safety and Health Act
PDD	Program Description Document
PEMP	Performance Evaluation Measurement Plan
PLN	Plan
PPE	Personal Protective Equipment
QAP	Quality Assurance Program
QRT	Quality Review Team
R2A2s	Roles, Responsibilities, Accountabilities, and Authorities
RadCon	Radiological Control
REC	Research and Education Campus
RWP	Radiological Work Permit
RTE	Road to Excellence
S&T	Science and Technology
SAO	System Architect Object
SC	Significance Category
SCWE	Safety Conscious Work Environment
SMC	Specific Manufacturing Capability
SME	Subject-Matter Expert
SPOMC	Safety Performance Objectives, Performance Measures and Commitments
TBD	Technical Basis Document
TC	Training Coordinator
TRAIN	Training Records and Information Network
TRCR	Total Recordable Case Rate
TREAT	Transient Reactor Experiment and Test Facility
VCO	Voluntary Consent Order
VPP	Voluntary Protection Program
WCB	Willow Creek Building
ZPPR	Zero Power Physics Reactor

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Idaho National Laboratory Integrated Safety Management System FY 2013 Effectiveness Review and Declaration Report

1. PURPOSE AND SCOPE

This review evaluates the effectiveness of the Integrated Safety Management System (ISMS) at Idaho National Laboratory (INL) for Battelle Energy Alliance, LLC (BEA) for fiscal year (FY) 2013. Integrated Safety Management (ISM) for INL is implemented per Department of Energy (DOE) "Integrated Safety Management System Policy" (DOE P 450.4A), requirements, and guidance in a manner that applies controls and precautions tailored appropriately to the hazards of the projects and work being performed.

An annual ISMS Effectiveness Review is required by DOE ISMS DOE Acquisition Regulation (DEAR) Clause 970.5223-1. The scope of the annual ISM effectiveness review included:

- Determining the effectiveness of integrating safety into work planning, performance, in supporting the safe performance of work, and in improving safety performance.
- Identifying strengths and weaknesses of ISMS implementation with focused attention on corrective and improvement actions.
- Identifying opportunities for improvement in efficiency or effectiveness of the ISMS, and identifying actions for continuous improvement.

The program description document, PDD-1004, "Integrated Safety Management System," was revised in April 2013 and a new revision will be initiated in early Calendar Year 2014 to incorporate latest laboratory improvements.

2. EFFECTIVENESS REVIEW

This section describes some examples of the collective strengths, weaknesses, and improvement initiatives for the Worker Safety and Health, Work Planning and Control, and Laboratory Management Systems. It should be noted that these are only a representative sample and primarily the efforts focus on improvements to processes at the activity level of ISM.

1. Strengths

- A. Although there have been unacceptable serious events in the past, there have also been significant attention, dedication, and resources focused on improvement and future prevention. BEA's strategy of focusing on these improvements includes extensive action and improvement plans that include: PLN-4030, "INL Sustained Operational Improvement Plan," PLN-4058, "MFC Strategic Excellence Plan," PLN-4141, "ATR Sustained Excellence Plan," and PLN-4145, "Radiological Control Road to Excellence," and LWP-20000, "Conduct of Research," (CoR) (pending final approval). As a result of these action plans, coupled with other assurance activities and metrics, significant improvements in operational performance, organizational competence, management oversight, and a reduction in the number of operational events are being realized. In short, the realization of the fifth core function of ISMS (feedback and continuous improvement) and the associated benefits are apparent.
- B. **Occupational Injury/Illness Safety Performance.** FY 2013 was one of the safest on record for BEA employees. The resulting Total Recordable Case Rate (TRCR) for FY 2013 was 0.89, which is second only to last year's record best since the inception of INL, as indicated in the chart below. This represents an improvement of over 25% compared to the FY 2004 baseline. Of the 30 Occupational Safety and Health Act (OSHA) recordable cases BEA employees incurred, 17 also resulted in Days Away Restricted or Transfer (DART), resulting in a DART Case Rate for FY 2013 of 0.51, an improvement of over 16% compared to the FY 2004 baseline. The FY 2013 DART Case Rate was adversely impacted by several cases, which involved significant injuries incurred while employees were performing tasks perceived to be relatively low risk (bending to obtain an instrument reading, rising to stand from a bus seat while on travel, reaching upward to retrieve a log book from a shelf, etc.). Thirteen of the 17 major organizations comprising BEA did at least as well or better, both from a TRCR and a DART Case Rate perspective during FY 2013, as compared to FY 2012.
- C. **Subcontractors Occupational Injury/Illness Safety Performance:** During FY 2013 there were 20 subcontractors that reported having a significant (more than 10 employees) presence onsite. Twelve of the 20 subcontractors were primarily construction subcontractors, which traditionally perform more hazardous work than the remaining eight subcontractors, which provide support services. During FY 2013 there were no occupational injuries reported involving employees of these 20 subcontractors that were classified as recordable. The resulting collective TRCR for FY 2013 for these subcontractors was 0.00, unchanged from the record performance of 0.00 for FY 2012. A historic comparison of such subcontractor performance is provided in the table below.

Fiscal Year	Work Hours	No. Recordable Cases	TRCR
2013	305,489	0	0.00
2012	464,587	0	0.00
2011	595,161	7	2.35
2010	505,612	5	1.98
2009	423,116	5	2.36
2008	253,848	5	3.94
2007	382,865	1	0.52
2006	194,041	2	2.06
2005 (Feb. through Sept.)	104,569	1	1.91

D. **INL Voluntary Protection Program (VPP).** An eight-member VPP review team from DOE Office of Health, Safety and Security (HSS) conducted an onsite review of BEA's VPP. The visit was a 2-week review of BEA's commitment to the VPP to determine continued Star-level qualifications by evaluating and documenting results of program participation versus program criteria. VPP criteria included Management Leadership, Employee Involvement, Worksite Analysis, Hazard Prevention and Control, and Safety and Health Training. After looking at documents, observing work, interviewing employees and managers, and performing physical walk-downs of workplaces, the team concluded the following:

1. The team was extremely pleased with the knowledge, enthusiasm and involvement of all INL employees regarding safety, and applauded the laboratory's continuous-improvement efforts.
2. "You have a real strong safety culture and VPP program here, and you clearly are on the path of continuous improvement," said Brad Davy, lead recertification assessor and director of the DOE Office of Worker Safety and Health Assistance. "We recommend BEA continue as a VPP Star Site, and we'll be back and visit again in 3 years."

E. **10 CFR 851 Outreach and Awareness Visit.** BEA participated in only the second 10 CFR 851 Safety & Health Program HSS Awareness and Outreach Visit conducted by the DOE Office of Health, Safety and Security. Glen Podonsky, Chief Health Safety and Security Officer and Pat Worthington, Director of Office Health and Safety led an eight-member team through approximately 20 separate discussions with a variety of workforce audiences, in-town and site visits. Glen acknowledged that when they had announced their intent to conduct these visits complex-wide, INL was one of the first to extend the invitation.

Glen's exit brief comments:

1. "It was obvious that people here at INL feel that safety is very important. They believe it, and they feel that management believes it."
2. Employees were not fearful to voice concerns.
3. Congratulated INL on the "Spirit" that is here.

- F. **Work Control.** INL has made numerous improvements to work control through enhancements in processes and training. BEA has additional actions in progress to continue to improve performance in work control. The following is a summary of both implemented and in progress multi-year improvements:

Work Control Process Improvements

Implemented:

1. Established a Work Management Steering Committee comprised of senior Operations management from across the site to monitor operational performance and provide direction for operational improvements.
2. Revised the maintenance work control process to address weaknesses that have contributed to earlier events and to improve operational performance. Key improvements include modification to job walk-down requirements (including participation and when required) minor maintenance threshold criteria, addition of a risk planning matrix for determining level of planning, and reinforcement of expectations for work document writers/reviewers/approvers. Guidance documentation was issued for work document development to set standards and expectations. Specific training was developed for work control document reviewers and approvers.
3. Piloted a Quality Review Team (QRT) program for maintenance work orders at ATR, which emphasizes a documented review by a peer group against a standardized score sheet.
4. Completed programming changes to the Hazard and Risk Planning System (HaRPS) to improve effectiveness in identifying job specific hazards and mitigations and providing appropriate level of output for incorporation into work control documents.
5. Established a Performance Review Team, which will perform periodic assessments of operational performance (including leadership and R2A2s, work control, conduct of ops, assurance and other specified criteria) at each area/organization. Completed reviews of Specific Manufacture Capabilities (SMC) and National and Homeland Security (N&HS).
6. Revised briefing process with emphasis on reverse (or interactive at a minimum) briefings for enhanced worker engagement.
7. Developed and issued GDE-646, "Preparation and Review of Work Control Documents for Science and Technology," to provide guidance for S&T organization for writing and reviewing research work control documents.
8. Issued LWP-9400, "Lockout/Tagout," (LO/TO) (Pending Training) to improve performance in the execution of LO/TOs by (1) reducing the number of personnel qualified to perform LO/TOs to only those who maintain proficiency through training and experience to perform these activities, (2) establishing a method to document simple LO/TOs to support peer checking, (3) implement the requirements for dual/independent verification of complex LO/TOs, and (4) implement a more robust, performance-based training and qualification program.
9. Issued LWP-20000, "Conduct of Research" as a web-based LWP to enhance the experience for the R&D community in obtaining relevant requirement(s), understand how to implement the requirement(s), connect with subject matter experts regarding the requirement(s) and communicate the standards and expectations for executing R&D at the INL.

In progress:

1. The INL QRT program, currently in review, will be implemented within all INL maintenance organizations.
2. HaRPS content output associated with the change mentioned above is near completion. The program will continue to include SME in development and review of work control documents.
3. Risk and hazards analysis is in progress for routine activities performed by INL employees. The results of the analysis will be reviewed against existing hazard controls to determine gaps in employee awareness and training. Existing training will be updated and additional controls, identified from the gap analysis, will be amended into HaRPS. The expected outcome will be to streamline the work control documentation due to enhanced worker knowledge of routine hazards.

Work Control Training Improvements**Implemented:**

1. Implemented oral boards of INL leaders in key operational organizations to assess competency and commitment for current position.
2. Completed Conduct of Operations mentoring in the field to improve understanding of expectations and performance.
3. Established and enhanced dynamic learning centers equipped with mockup systems to enable hands-on training experiences for Conduct of Operations, work planning, management observations, and other ES&H topics.
4. Transitioned planner training to a performance-based program through the use of dynamic learning centers to strengthen planner performance and resultant work control documents. The first module was completed and endorsed by Electric Power Research Institute (EPRI). All planners were required to attend and pass a written exam. The design is complete for adding the Dynamic Learning Center activities to the Planner Qualification (walk downs and hazard identification)

In Progress:

1. As new personnel are assigned key operational positions, oral boards will be conducted to assess competency and commitment for the position.
2. Conduct of Operations mentoring in the field will continue to ensure understanding of expectations and performance.
3. Additional modules of the performance-based planner training focusing on Dynamic Learning Center activities will be rolled out with the expectation of all planners attending and passing a written examination.
4. Modifications to the Conduct of Operations Core training have been initiated. The new training will be at least 40 hours and will include Dynamic Learning Activities intended to strengthen Conduct of Operations principles.
5. Conduct of Operations continuing training for FY-14 is being developed to address noted adverse trends and areas identified as needing improvement.

6. CoR overview training was completed in the Fall of 2013. The initial training communicated roles and responsibilities for key research positions, standards and expectations for executing R&D activities, and how to navigate the web-based CoR LWP-20000. A Conduct of Research Execution Training Program will be developed in FY 2014 that will establish and sustain the knowledge of researchers on LWP-20000. The course content will focus on delivering quality R&D, executing work safely and securely and effectively performing assigned functions for R&D activities.
7. Training on LWP-9400 is nearing completion. The process will (1) reduce the number of personnel qualified to perform LO/TOs to only those who maintain proficiency through training and experience to perform these activities, (2) establish a method to document simple LO/TOs to support peer checking, and (3) implement the requirements for dual/independent verification of complex LO/TOs.
8. Skill-of-the-craft checklists are being evaluated to ensure (1) the associated hazards are fully analyzed and documented, (2) requisite training is provided and maintained for crafts, and (3) documented skills and training are aligned with the LWP-6200 commensurate with the work scope that is being performed under minor maintenance.
9. The Science and Technology R&D Training and Sustainability Program will incorporate;
 - a) mentoring so that S&T researchers may benefit from the experience of a senior researcher,
 - b) a peer review process to evaluate competency commensurate with responsibilities and ensure researchers and management execute high-caliber projects, c) develop feedback mechanisms to continually emphasize INL values on work control, safe work execution, and delivering quality R&D.

In summary, through LWP-13730, "Developing and Maintaining Assurance Portfolios and Schedules," INL Cognizant Directors are required to provide quarterly reports that evaluate the results of their assurance portfolio activities. Based on the latest quarterly analysis of the INL Work Management System, all elements of the program are showing improvements in the program and program implementation. (See charts below)

12-MONTH TREND ⁽¹⁾	1 st Qtr FY13	2 nd Qtr FY13	3 rd Qtr FY13	4 th Qtr FY13
Conduct of Operations	C	I	I	I
Maintenance	I	S	I	I
Safe Work Performance	I	I	I	I
Contracted Work	S	S	S	S
Legend: C = Concerning, I = Improving, S = Steady, U = Unknown				
(1) – Progress towards Work Management System success factors (defined in the chart below) has been tracked and is displayed in the 12 month trends shown in this chart.				

As a result of the changes that have been initiated, the success factors for each program element are also improving.

SUCCESS FACTORS	1 st Qtr FY13	2 nd Qtr FY13	3 rd Qtr FY13	4 th Qtr FY13
Conduct of Operations ⁽¹⁾	Y	Y	Y	Y G
Maintenance ⁽²⁾	Y	Y	Y	G
Safe Work Performance ⁽³⁾	Y	Y	Y	Y G
Contracted Work ⁽⁴⁾	G	G	G	G
Legend: Blue = Highly Effective, Green = Effective, Yellow = Marginally Effective, Red = Ineffective (1) <u>Conduct of Operations</u> success is realized when the program is ensuring that disciplined operations that support mission success, promote worker, public, and environmental protection, and minimize the likelihood and consequences of human fallibility or technical and organizational system failures is consistently implemented across INL. (2) <u>Maintenance</u> success is realized when the program is ensuring that INL facilities are available and ready to safely support mission objectives. (3) <u>Safe Work Performance</u> is realized when work control ensures the safe and effective performance of work. (4) <u>Contracted Work</u> success is realized when contracted work is performed in a safe and compliant manner and is focused on minimizing the impact to ongoing research activities.				

Based on the continuing evaluation of the work control process's overall performance and using the performance criteria defined in LWP-13750, "Performing Management Assessments," the INL work control process overall performance is rated as **Effective/Continually Improving**. The work control process is documented, understood, and meets requirements. Executions of the program generally provide the expected results, personnel reliably report noted problems with program execution, and there is evidence of ongoing improvement with the program.

However, there is evidence (in a few areas) that some personnel do not understand program requirements under their responsibility or do not consistently implement them. These areas are being addressed, as noted in the activities "In Progress" section above.

G. **Radiation Control.** BEA management continues its commitment to the improvement of the Radiological Control (RadCon) program and monitors the program closely. Throughout FY 2013 the Office of Nuclear Operations and Radiological Control Excellence (ONORE) provided status to management on the progress of the Road to Excellence (RTE) Project Execution Plan, PLN-4145 and evaluations of the plan's effectiveness. The Leadership Management Team and Operations Council were apprised of the progress of program improvements through regular reports from Radiological Control management. Radiological Control metrics and assessments indicate an effective program, but there is room for improvement. An assessment conducted by HSS of the Radiological Control program concluded that the program was "Effective." The organization has accomplished a great deal by making numerous improvements while simultaneously executing effective radiological work.

1. The primary initiative undertaken in FY 2013 was the use of process mapping and the application of LEAN techniques to the radiological work control process. Substantial changes were made to the Radiological Work Permit (RWP) and as low as reasonably achievable (ALARA) processes and related procedures and plans.
2. Benchmarking efforts of Pacific Northwest National Laboratory, Brookhaven National Laboratory, Oak Ridge National Laboratory, Savannah River National Laboratory, and Palo Verde Nuclear Generating Station were utilized to facilitate improvements.
3. Online training was developed for radiological workers and RadCon staff. Several dry runs of the new training and affected procedures were executed and extensive communication efforts have been exercised to ensure adequate understanding and that expectations are implemented.
4. RadCon continued to focus on staffing needs in the home organization and the field, resulting in the hiring and or re-assignment of several key positions.

5. RadCon continued to improve the quality of the assessments performed for the organization. Assessment lines of inquiry are developed from prior assessments and ICAMS issues and then scrutinized by the Radiological Control Director or Senior Radiological Control Manager to ensure a consistent product that adheres to procedural requirements. A rigorous review is subsequently performed on assessment plans and reports. Completed assessments with the effectiveness rating are reported in the quarterly assurance report. Success in these efforts was recognized by ONORE, specifically:
 - 1) "Assessments were found to be thorough, well-documented, based on risk and the triennial review requirements, and self-critical."
 - 2) "These were some of the best self-assessments I have seen in terms of being self-critical and thorough."
6. Key metrics in combination with assessment results indicate an effective program, but with room for improvement. For example:
 - 1) The number of reportable occurrences and non-reportable events remained low (1 or 0) throughout the fiscal year, but were not related to radiological work control.
 - 2) The number of non-reportable contamination events also declined and remained at zero throughout the year indicating the success of radiological workers and RadCon staff at contamination control.

H. Performance Assurance improvement goals and path forward are:

1. Institutionalize the focus of defining and monitoring key performance metrics versus performing low-value assessments of risk controls and programs. This Management Review Meeting (MRM) approach exists at ATR and is maturing at MFC. Goal is to spread this across INL.
2. Develop core lab-level metrics in Operations, Research, and Business owned by the Division Laboratory Directors (DLDs) with organizational drill-down capability. This effort will drive key standards and integration across organizations.
3. Streamline the Issues Management process and introduce a method that better supports low threshold reporting (causal analysis and closure methods), replace ICAMS to improve employee engagement, institutionalize trending of issues across organizations, and leverage current nuclear industry efforts in Contractor Assurance System (CAS) areas. Associated efforts are:
 - 1) New streamlined process/procedures being rolled out with LabWay. The roll-out phase for Issues management, NCRs, and Management Observations are being Improved with efforts aimed at reducing CAS administrative process burdens and aimed at freeing up managers to spend more time in the field.
 - 2) The Integrated Operational Performance Analysis Committee (IOPAC) is maturing in evaluating issue trends across INL. IOPAC reports periodically to the Operations Council. IOPAC was formed for the INL utilizing trends associated with Discipline Codes, Culture Codes, and ISMS codes to help understand issues to be preventative verses reactive. The CAS systems have been modified to add these codes to help in the committees efforts:
 - Standardize data and metrics (apple to apple comparison)
 - Modify tool to help collect and report data
 - Committee will analyze organizational and program trends

- Management System Leads will be asked to attend the committee for trends that impact management systems
 - Committee will review trends collected over a defined time period
 - Committee will categorized inputs from trends and analysis
 - Looks for long term trends
 - Provides recommended actions
 - Reviews status and effectiveness of prior actions and concerns
 - Schedule focused assessments and/or observations to address trends.
- 3) INL has increased focus on recurring issues in relation to effectiveness of corrective actions and lessons-learned communications. For example, toward the end of FY 2013, a recurring event was declared in the Occurrence Reporting and Processing System (ORPS) for a lineman injury falling from a bucket truck. INL will work with Department of Energy Idaho Operations Office (DOE-ID) to revise the process for declaring recurring issues in FY 2014. Close scrutiny of corrective actions will continue through the Corrective Action Review Board (CARB) and increased integration among the embedded assurance groups.
 4. Improve sharing of lessons learned across INL by providing a useful template (1-page), leveraging existing forums (Nucleus, LMT meetings, etc.), and improving access to lessons learned.
 5. Eliminate all non-value assessments that are not required by contract or regulation. Repurpose self-assessments as a management tool to better understand performance trends rather than the primary method for understanding performance. Reduce the types of assessments; there are currently 18 different types.
 6. Management observations being performed each month across INL (average in the hundreds). Managers are in the field, but efforts and behavior expectations are not consistent. Procedure and training improvements are planned for FY 2014. Improvements to the Management Observation Program (MOP) as follows:
 - 1) Standardize expected behaviors for high-hazard work. Will improve quality and trending capability.
 - 2) Institutionalize the knowledge-based worker management observation. Developed by each organization tailored to their expertise. Can be leveraged by research community as they pursue mentoring program.
 - 3) Improve line manager “coaching” competency through in the field mentoring and class-room training.

Accomplishments and improvements in FY13 to both the Contractor Assurance System (CAS) and Quality have set in place the framework that models best industry practice (i.e. INPO). Preliminary monitoring of these changes have shown an increase in documented participation in management observations in the field by the EES&T Organization compared to prior years. The roll-out of the new Conduct of Research process is showing increased integration through upfront engagement by support organizations in research projects. There has been a documented increase in Lab-wide trending of issues through the Integrated Operations Performance Analysis Committee (IOPAC). The quality of Contractor Assurance products such as assessments, issues management and event investigation and response have shown improvement over FY13. These and other changes implemented by the Laboratory Performance Organization are anticipated to improve safety, efficiency, and quality and will be monitored through new monthly Management Review Meetings (MRMs) to ensure effectiveness over FY14.

I. Quality Assurance Organization accomplishments and improvements:

1. The Nonconformance Reporting (NCR) process was completely revised and the NCR procedure was revised along with the process flow to address LabWay requirements. The NCR process was developed using ISMS principles to define the scope of work and provide feedback on nonconforming items to ensure that nonconforming items are prevented from being used in systems, structures, or components.
2. A spreadsheet was created to address all QA for DOE Order 414.1D, NQA-1 2008 with the 2009 addenda, 10 CFR 830 Subpart A, DOE Order 226.1B, and 10 CFR 50 Appendix B. The spreadsheet ties the QA requirement to the applicable INL implementing procedures and the management system that owns the implementation of the requirement. The requirements roll down integrates with the ISMS program to ensure the Quality Management System is incorporating the ISMS principles and assists the management systems in understanding the requirements to be able to plan work and execute work in accordance with the requirements. Note that this is the first time a complete set of Quality Assurance requirements have been established in a single database linking them to the implementing procedures and management systems that implement them.
3. The INL Quality Assurance Program (QAP) (PD-13000) is being revised to address the changes to INL program areas and to address the NQA-1-2008 with 2009 addenda 18 elements. The QAP incorporates the ISMS principles into the QAP to ensure the programs are integrated and emphasizes the ISMS principles of early planning to identify the appropriate requirements and controls to be able to perform work within the controls. It also emphasizes the requirements for feedback through the assessment and reporting processes to ensure problems are being addressed and corrective actions to correct problems that would hinder INL from achieving its mission and objectives.
4. Quality Assurance requirements and a guidance document were developed for inclusion into the new CoR. CoR is scheduled to become effective in December 2013. The QA organization was heavily involved in generating the QA requirements and guidance for the CoR. In addition, the Researcher webpage was updated to be current for the QA organization and information to be of better use for the researchers. The Quality Assurance requirements and guidance were incorporated into the CoR, which follows the ISMS Core Functions and Guiding Principles to plan and execute work and to follow up with corrective actions when necessary. The new CoR emphasizes proper planning and defining the scope of work early in the process to be able to identify the correct QA requirements and other requirements that apply for the execution of work activities. This early planning is in line with QA and ISMS principles.

J. **Environmental Management System (EMS)** comprises five functional areas: Environmental Performance Measuring & Reporting, Environmental Controls, Environmental Commitments, Regulator Interface Support, and Waste Management. Significant accomplishments during FY 2013 include:

1. During two semi-annual third-party surveillances, the EMS has successfully maintained ISO 14001 registration with no non-conformities during the year. ISO 14001 registration is evidence that INL's EMS effectively utilizes processes and systems that are fully analogous to the core functions of ISMS.
2. Ten of 12 sustainability goals are on or ahead of schedule. In addition, six projects were implemented to reduce annual water usage by over 50 M gallons annually, although the long-term goal remains at risk. The energy intensity reduction long-term goal also remains at risk.
3. A draft business case for addressing the MFC Contact-Handled Sodium Backlog was prepared and submitted to DOE-ID in September.
4. With support from Environmental staff at ATR, a Voluntary Consent Order (VCO) to address the new Clean Air Act requirement (40 CFR 63 subpart ZZZZ) that is applicable to the ATR diesel generators was executed with Department of Environmental Quality (DEQ). The VCO provides for continued operation of the ATR diesel generators in non-compliance with the requirements of 40 CFR 63 Subpart ZZZZ to support ongoing ATR operations while converting from continuous operation of the diesels to a combination of commercial power, an uninterruptable power supply and emergency generators. The basis for the VCO is that the transition to commercial power accomplishes the same goal as upgrading the diesel generators to comply with Subpart ZZZZ.
5. An ATR Complex Waste Minimization Committee has been established to provide a technical assessment of selected waste generating processes to identify economically practicable waste reduction opportunities that can be implemented to reduce the volume and toxicity of cold waste, industrial waste, hazardous waste, and radioactive waste generated at the ATR Complex.
6. INL has incorporated a sustainability review and pollution prevention (P2) review of new activities, as part of the Environmental Checklist process. This identifies P2 activities early in the project lifecycle, allowing costs for implementation to be built into project budget estimates early.
7. The EMS performs daily review and weekly trending of environment, waste and sustainability-related issues. The trending results are posted on the Environmental Support & Services (ES&S) Self-Assessment Tools webpage and disseminated within ES&S as appropriate.
8. INL has been awarded the Federal Electronics Challenge (FEC) Gold award for their efforts to use electronics in an environmentally conscious manner. The award is given by the Environmental Protection Agency and the White House Council on Environmental Quality. INL has received an FEC award each year since 2007. FEC is a program designed to encourage federal facilities and agencies to provide leadership in the environmentally sound and cost-effective management of electronic assets throughout their life cycle. Electronics are targeted because they contain toxic constituents; consume significant energy during use and present complex challenges for disposal. Environmental Support and Services employees teamed with Property Management, Procurement, and Information Management to make the award a reality.

- K. **Safety, Leadership Culture Survey** continues to mature the culture at INL. The maturity is focused on the organization's behaviors (behavioral and culture factors not management system maturity). Modifications to the Safety, Leadership, and Engagement Survey included 13 new questions, the inclusion of INL values, and sorts available at the department level. The survey results show a modest positive trend over the last 4 years in spite of dynamics at play associated with workforce restructuring and reduction efforts, when results could have been significantly lower. INL employees (90%) consistently strongly agree and value safety as it received the top values. Each Leadership Management Team (LMT) member receives and analyzes the survey results, holds impact planning sessions to develop action plans targeted towards improvement initiatives, and focuses on operational excellence. Progress observed within and across directorates is shared throughout the organization. Culture changes are being communicated and shared throughout INL.
- L. **Facilities and Site Services** reduced the severity and frequency of operational events by nearly 40% (as documented by Initial Notification Reports). This operational improvement is attributed to an increased emphasis on safety awareness and the following initiatives that are in line with ISMS principles:
1. Performed peer-to-peer reviews of processes and documentation to ensure consistency, and incorporated INL values in all of our processes.
 2. Increased worker/management level involvement in incident resolution so employees and managers both feel ownership of solutions to avoid further incidents.
 3. Reviewed 100% of work packages to ensure all had the specific level of detail to perform each job safely.
 4. Developed a Safety Improvement Strategic Plan to investigate past injuries, identifying appropriate focus areas and actions for FY 2013. Focus areas included employee ability to work, injury awareness/reporting, adequate equipment/tools, and adequate personal protective equipment (PPE). Several actions have been initiated and completed, while others are ongoing. The plan will be updated following discussions with individual work groups in November and December 2013.
 5. Performed documented safety pauses on a monthly basis and highlighted safety awareness and avoidance of distractions on the job.
 6. Incorporated safety culture survey feedback into our work (Community of Practice suggestions, Opportunities for Improvement, etc.).
 7. Printed and distributed to all Facility and Site Services (F&SS) employees a laminated F&SS Values Card that lists Mission, Our Principal Priorities and How We in F&SS Live Our Values Each Day." The first principal priority is "World-leading Safety Behaviors & Environmental Stewardship."
 8. Performed job walk downs and management observations on a regular basis. F&SS deputy director observed and mentored managers in ways to improve the quality of their management observations to increase employee safety awareness.
 9. Scheduled "paired management work observations" whereby a trained observer and an independent observer (who offers a fresh set of eyes) walk throughout a facility interacting with workers and observing behaviors.
 10. Developed a "pledge of interdependence" signed by all Power Management linemen that provides heightened safety awareness and will guide their work actions. Linemen and managers collaboratively wrote and signed the pledge in response to two linemen injuries on the job in 2012 and 2013.

11. Issued a letter in September from the director and deputy director to F&SS employees, "General and Specific Expectations for Injury and Illness Reporting and Scene Preservation," which encouraged workers to report all injuries—no matter how minor—to prevent reoccurrence, avoid similar incidents, look for trends, and keep a minor injury such as a cut from worsening without treatment. Employees were reminded they should have no fear of retaliation for reporting any injury or illness as their safety is our number one priority.
12. Replaced or upgraded numerous sidewalks throughout the Research and Education Campus, a vast improvement to the walking surfaces throughout the campus for mitigation of slips, trips, and falls.
13. Initiated a mini Human Performance Initiative (HPI) review process.
14. Increased management participation in Employee Safety Teams to establish rapport with workers and demonstrate management commitment to the safety culture and values.
15. Pursued initiatives to remove pocket knives to prevent them from being used as an alternate tool, and have begun implementing an initiative to provide better-fitting safety glasses for all workers with the aim of significantly reducing eye injuries, particularly for those performing outdoor work.
16. Performed safety assessments on all BEA heavy equipment, identified and prioritized issues, and are in the process of making modifications needed for safer ingress and egress.
17. Increased celebration and recognition of employees' safe work accomplishments to foster stronger commitment to working safely.

M. Nuclear Operations incorporated several improvements:

Improvements made at ATR

1. ATR evolved trending, focused interviews and Management Observations to address areas of concern associated with the Nuclear Safety Culture (NCS), ISMS, and MRM recommendations. Trending from NSC and ISMS are communicated to ATR staff for resolution through the MRM process.
2. ATR refined metrics used to monitor performance in required oversight areas as well as continuing focus in areas of ISMS through the ATR Sustained Excellence Plan (PLN-4141). ATR has committed to continuous improvement associated with these areas and meets weekly to status PLN-4141 Improvement Action progress to ensure that this commitment is met. The PLN-4141 Schedule Performance metric added this quarter provides a monthly overview of 3
3. ATR developed a new Scantron Knowledge Worker Observation card to help improve observations associated with engineering and other knowledge workers. The new observation card will assist management in establishing a common understanding of the standards and conditions for effective application of the human performance tools associated with Knowledge, Workers, and ISMS. ATR started utilizing the new card during March. The information provided by knowledge-based worker observations provided insight into the performance of employees associated with ISMS and HPI who directly and indirectly affect ATR Operations.
4. ATR continues to transfer from INL Corrective Action Management System (ICAMS) to LabWay for implementation, initiation, and closure of Issues, Observations, NCRs, Maintenance Work Requests, and General Actions to support process improvement activities. ATR is striving to have all ICAMS data transferred to LabWay by the end of Calendar Year 2013.

5. ATR fostered a Nuclear Safety Culture Panel for use by ATR, MFC, and SMC. The plan describes the process that will be used to assess and foster improvement in Nuclear Safety Culture as well as ISMS. A Nuclear Safety Review Board (NSRB) (hosted by senior INL leadership and made up of a team of people with nuclear safety culture evaluation experience) is conducted approximately every 6 months and serves as the oversight function of this process. The Nuclear Safety Review Board serves an important function of this process. Their review challenges INL's leadership to remain self-critical and support the Laboratory's mission as it relates to ISMS.
6. ATR developed a tool in the effective use of operating experience (OE), lessons learned, access to pertinent OE, improve INL's use of operating experience, and supplement our INL lessons-learned database, ATR designed a solution that put together an easy-to-use OE database accessible from our ATR homepage. The information is segregated by useful topic areas and is searchable. The system includes a good mix of ATR, INL, DOE, and nuclear industry operating experience. Also included are "how to's" for using the more extensive Institute of Nuclear Power Operations (INPO) OE database. Learning from ours and other's experiences and using OE to help remind us of how routine activities can go awry is a powerful tool in performance improvement and maintaining an environment committed to ISMS.
7. ATR has been actively engaged in the development and implementation of IOPAC as outlined above.

Over the past year, ATR has seen a positive trend in the awareness of the necessary tools to help provide a safe workplace while protecting the worker, the public, and the environment. Prior to this year, safety culture was not a variable used to help identify issues that would impact safety. Today ATR and the Laboratory use these codes to help provide input into the perceptions of our staff that can be corrected for future work.

Improvements made at MFC

1. MFC established a standard suite (17 and 5 more planned for January 2014) of key performance indicators (KPIs) that monitor, measure and trend performance in 5 key areas. These include safety, disciplined operations, radiological control, results (milestones and budget), and personnel development. The performance is reviewed monthly at the management review meetings (MRMs) and actions are defined and assigned based on the management review. Two key improvement teams have been launched for FY14 to improve MFC performance in safety and disciplined operations. The other three major performance areas were above or within acceptable performance goals.
2. MFC worked closely with the DOE counterparts and is now doing the monthly selection and Contractor Assurance System (CAS) grading with oversight and monthly feedback from the DOE customer. This evolved over a four month period from DOE doing the selection and grading to MFC performance assurance doing the selection and grading. The monthly grading covers four performance metrics (self-assessment, issues management, corrective actions, and event response and reporting). This demonstrates the confidence in MFC to be self-critical in our monthly grading.

3. MFC developed and implemented an automated field observation program with a data collection system for management observations, senior supervisory watches (SSWs), and infield mentoring. The system tracks unsatisfactory, satisfactory, positive and opportunity for improvement observations using standard observation cards within the system. In addition it allows the observer to send immediate positive or need attention feedback to other personnel or managers. The observation results are then loaded into the ICAMS/LabWay system for action, tracking, reporting and trending. MFC is currently working with IT and DevonWay to develop and interface that allows the entries into the MFC Field observation database to populate LabWay through single entry until a longer term observation program solution for the lab is developed.
4. The MFC Corrective Action Board and Management Review Committee were both strengthened and became more functional in FY13. The operation and structure of these meetings was improved and regular attendance by the members was also significantly improved. The meetings occur regularly every week with focus on review of the weekly issues and the significance level assigned, key issue corrective action plan (CAP) review, key issue closure review, review of effectiveness reviews, performance review, etc.
5. MFC held a series of performance assurance improvement workshops in September 2013. These were focused on improving the following areas. Improvement in these areas have been noted since the workshop, but they will remain on-going focus areas at MFC in FY14 as we transition from ICAMS to LabWay and learn this new system. MFC went live on LabWay on December 2, 2013.
 - Development of more meaningful and measurable corrective action plans (CAPs).
 - Improved closure evidence when closing issues.
 - Improvement in entering items from assessments and observations into the issues management system.
 - Improved effective reviews and associated reports when define corrective actions and issues have been in place for 6-12 month.

As part of the improvement workshops, MFC developed a new format and content template for effectiveness reviews and trained personnel at MFC on its use. The template is in pilot mode at MFC until March of 2014 when it will again be reviewed for utilization lab-wide. The new template has yielded significant improvement in the effectiveness reviews that have been completed and reviewed by the MFC CARB since it was launched in September.

6. The monthly and quarterly reporting for MFC has improved significantly in FY13. The performance assurance team moved from a team focused on data and chart development to a group that also performed the analysis on what the data was telling us about MFC performance and areas for management attention or action. This was a significant shift in responsibility for the team and has yielded excellent results that will continue to improve with time and experience.
7. The documentation of the MFC Trend Program and maturation of the Nuclear Safety Culture Monitoring Panel are ongoing focus areas for FY14 at MFC. The next quarterly MFC Nuclear Safety Culture Monitoring Panel meeting is scheduled for December 12, 2013.
8. MFC also supported the IOPAC as outlined above.

N. **Training.** One of Training Services key focus areas is to provide a safe learning environment, free of hazards in which the training staff and their customers can learn knowledge and skills important to protecting the worker, the public, and the customer. Improved training activities accomplished in FY 2013 include:

1. Conducted safety walk downs of all training classrooms and offices used to teach lab-wide courses and corrected deficiencies.
2. Developed and implemented planner courses that do a better job implementing ISMS in the work planning process.
3. Developed and delivered training for Site-wide trainers on how to use the “Introduction” portion of classroom training to tie course topics back to ISMS principles and INL values.
4. Produced and placed ISMS and INL value posters in each classroom for instructors to refer to during course delivery.
5. The HPI Working Group developed and implemented a “Mini HPI Review” process to quickly and respectfully understand performance issues and recommend preventive and corrective actions that can be deployed within 24 hours of an identified concern.
6. Developed Dynamic Learning Activities (DLA) for ~200 supervisors and managers involved with high-risk work that focused on improving field observation skills—a line management responsibility.
7. Provided hands-on training in the form of DLAs on the CFA Closed Loop Simulator for ATR, MFC, and SMC operations personnel to strengthen CCR.
8. Raised the bar on examinations and practical evaluations of Rad Worker and LO/TO workers to strengthen CCR for high-risk work.
9. Based on student feedback (Employee Involvement) during training on a new procedure revision, stopped LOTO training and revised the process and course before proceeding.

During 2014, INL Training services will focus on improving the following key performance areas:

- Raising the bar on examinations and practical evaluations for Hosting and Rigging workers to strengthen CCR for this high-risk work.
- Revising additional planner courses to improve the implementation of ISMS in the work planning process.

O. **Asset Protection.** INL successfully downsized the Safeguards and Security program by approximately \$9M and 62FTEs, but maintained security effectiveness at the higher priority security interests and continued safe operations. A number of accomplishments highlight INL’s performance in this area, a few are included in this report:

1. Sustained improvement in the seriousness and quantity of security incidents. The continuous improvement is attributed to the routine tracking and trending of security incidents and their causes and the emphasis from INL senior leadership on the importance of successful security behaviors. INL Safeguards and Security teamed with National and Homeland Security to create a separate security incident reporting process for INL-related programs and facilities.
2. The Laboratory Protection Security Systems division successfully deployed and tested a new infrared (IR)/microwave security system provided by HSS for the ATR Complex perimeter. Testing reports were provided to HSS with recommendations for improvements.

3. INL's Security Systems division successfully designed, procured, installed, tested, and transitioned from an analog video assessment system to a fully digital video assessment system. This included the removal of hundreds of analog cameras and the installation of over 285 cameras along with the necessary Ethernet based servers, routers, switches, and the associated network cabling to support it. Security operations were supported and maintained during the entire process. Additionally, access control and intrusion detection systems were installed at the new Research and Education Laboratory, approximately 78 card readers and an automated vehicle gate were installed for access control.
4. Laboratory Protection safely conducted five Force-on-Force exercises against the threat prescribed in the DOE Graded Security Protection policy. These drills are potentially higher risk in nature and were conducted without incident.

There were also a number of improvements in incident management and emergency response, a few are included:

1. INL incident command capabilities were improved along with the definition of incident management roles and responsibilities for various emergencies through Protective Force and Fire Department joint drills. This included the execution of monthly evaluated tabletop exercises and planning activities for future full participation performance evaluations.
2. INL demonstrated a proficient transition from developing and implementing the Continuity of Operations Plan (COOP) to conducting productive training scenarios, drills, and exercises. The Continuity Emergency Management Team (CEMT) that provides leadership for the Continuity Emergency Response Group (GERG) demonstrated great situational awareness in the INL's first annual COOP exercise. Management from both Protective Force and Nuclear Operations represented the CEMT in a professional manner and provided leadership qualities necessary to carry out the COOP mission.
3. The Fire Department enhanced hazmat response capabilities through the acquisition of contemporary chemical and biological detection and characterization instrumentation. The INL fire department now deploys quantitative characterization capability not previously available.

2. Weaknesses

- A. Although injury rates in FY 2013 are trending positively, the Laboratory remains seriously concerned about injuries and the behaviors leading to these injuries to BEA employees and contract employees, as well as the number of operational events.
- B. Two serious incidents involving worker injuries occurred during FY 2013:

A Researcher Receives Severe Burns Working with Molten Salt

A researcher was conducting a test to observe the performance of a new a sintered metal sparger that injects steam into a bath of 900°C molten salt. During the test, an unexpected increase in steam feed line pressure resulted in release of steam and molten salt through the top of the reactor vessel. The system being tested was contained in a plexiglass enclosure; however, the top of the reactor vessel was intentionally left unbolted and a side panel was left open in order to access the equipment. The released steam and molten salt struck the researcher, injuring portions of his left arm and shoulder, the left side of his head above the face, and two spots on his upper chest. The injuries occurred also, in part, because the worker was wearing the wrong personal protection equipment. He was wearing cryogenic gloves designed to protect against excessive cold instead of excessive heat, and a lab coat that was not designed to protect against 900°C liquids.

In the subsequent investigation, two root causes were identified. The first pointed to a breakdown in management oversight of the experiment due to insufficient and ineffective use of two key laboratory management processes, the Management Observation process and the Issues Management Process. The second identified the fact the experiment was performed outside of the requirements of the applicable procedures. The work scope was not fully described in the procedure, and, as a result, an effective hazard analysis was not performed.

Lessons Learned:

Ensure management effectively (1) conveys expectations concerning personnel and equipment safety while conducting research and (2) monitors performance against those expectations. Researchers often focus their attention on the scientific value of their experiments and fail to critically examine the safety aspects. Ensure management is aware of hazardous experimental work performed by their employees. Experimenters may not always keep their management informed of hazardous experiments. The combination of ineffective communication of expectations, ineffective performance monitoring, and lack of awareness of performing hazardous work resulted in a researcher receiving severe burns while performing an experiment outside the boundaries of the processes designed to control scope and safety.

As a result of the cause analysis for the molten salt gasification incident a set of corrective actions was implemented. These actions focused on sustainable changes in how INL performs work in our laboratories. All actions will have been completed on or ahead of schedule by November 27, 2013. Key areas of the corrective actions were the development of the CoR procedure, which was developed with significant input from end user technical staff, the development of a new guide for preparing laboratory instruction, and the development of a program that will be ongoing to ensure competence commensurate with responsibility for both research staff and their management. Opportunities for improvement were identified from the results of the corrective actions in the areas of Conduct of Engineering and the roles and responsibilities of subject matter experts. A follow-up effectiveness review to these corrective actions is scheduled in FY 2014.

Lineman Fall from a Bucket Truck while Accessing the Bucket at INL

On July 23, 2013 at approximately 9:10 am, a Power Management lineman slipped while assessing the bucket of the lift truck. The linemen fell approximately 4.5 feet landing on the deck of the truck; the fall resulted in a fracture and lacerations to his left forearm. This event was determined to be a reoccurrence to a similar event that had occurred in October of 2012 when another linemen fell approximately 8 feet while accessing a bucket on a different lift truck; the fall resulted in two broken ribs, pain in the shoulder, and abdominal pain.

An investigation and cause analysis was conducted following the October event and corrective actions were identified and implemented. The corrective actions addressed 3 focus areas:

- 1) Lack of hand holds or additional engineered safety features to prevent falls have not been added to the bucket truck to assist in accessing the bucket. The fall hazard was considered, but mitigations were not fully thought out and additional safety features considered at that time.
- 2) Linemen have successfully accessed the bucket many, many times in the past and have regarded the activity as low-to-no risk. There is nothing in the current work control process that triggers discussions about what are considered general hazards such as accessing the bucket on a bucket boom truck.

- 3) Tailgate training was held for identified personnel and additional hand holds have been added to the bucket truck. Specialized equipment may not have provided desirable protection from falls. Successfully accessing a bucket truck for a number of years could lead to complacency. The new handholds and handrails allow employees to maintain a 3-point contact while accessing the equipment.

Following the July injury, a second investigation was conducted and a corrective action plan was developed. It was determined the lift truck involved in this injury was from the equipment pool and had not been enhanced following the October event; it should be noted the truck did meet minimal standards. An evaluation of all INL owned bucket trucks was completed and consequently, this truck and two others were removed from service due to age and the availability of newer equipment designs.

The corrective action plan includes 16 actions total that focused on why this event occurred. Seven of the actions were determined to be corrective, and nine were designated as improvement. Four of those corrective actions have been completed and seven of the improvement actions have been completed to date.

Examples of corrective actions include an evaluation to determine the effectiveness of frontline management. An independent review team made up of managers from across Battelle affiliated laboratories was assembled and asked to perform this assessment. The overall report given during the out brief was positive with minor suggestions for change. Another corrective action was to assess all heavy equipment (trucks, cranes, etc.) with working heights above 48 inches for fall protection and the need for potential modifications to ensure safety. This has been completed and the modifications to equipment are taking place. Nine of the 16 actions have been completed and closed. All of the actions completed to date have been completed on time and had verification performed. Work continues to close the remaining actions.

3. Improvement Initiatives

- A. **LWP-20000, "Conduct of Research,"** was established to deliver a sustainable program that covers the entire R&D life cycle (Plan/Propose, Execute, Communicate, and Complete). The Conduct of Research Training Program (CoRT) ensures S&T employees are trained to deliver quality R&D, execute work safely, and effectively perform their assigned functions while protecting themselves, the public, and the environment. The ongoing web-based tool for CoR (LWP-20000) life cycle phases will be implemented in FY 2014.
- B. **Reorganization and Structure of Mission Centers.** The new "Mission Center" model has been developed to ultimately replace assurance portfolios currently described in LWP-13730 early FY 2014. The revision to LWP-13730 is under review through the INL's electronic document management system. The scope will primarily impact performance and analysis reporting, and assessment planning functions within the Contractor Assurance Management System. Changes include:
 - 1) Replacing assurance portfolios with a requirement for monthly MRMs and metric reports grouped by Mission Centers.
 - 2) Using a common set of metrics operations across all MRMs (in addition to mission center specific metrics).
 - 3) Providing performance information, including adverse trends, reported to operations and executive council monthly.
 - 4) Providing quarterly roll-up of performance information and adverse trends by Lab Performance.
 - 5) Scheduling Lab-wide assessments through Lab Performance.

Mission Center performance indicators will be reported through MRMs. The MRMs will have the following expectations:

- 1) Include line managers who own the metrics and performance outcomes under review.
 - 2) Report timely (typically monthly) performance outliers and action plans to Ops Council.
 - 3) Include analysis and actionable information.
 - 4) Develop interactive “we are in this together” discussions of metrics, related actions, and accountabilities.
 - 5) Elevate cross-cutting risks (whether related to research, operations, or business) to the Operations Council. Other risks or performance concerns will be elevated to INL Business Portfolio Stewards (DLDs).
- C. **Improvements will be incorporated into LWP-6200** which include clarification and setting expectations for (1) proper use of lessons learned, (2) collection methodology and subsequent use of feedback, (3) work scope statement development, (4) proper bounding of controls for troubleshooting work orders, (5) proper development and control of Post Maintenance Testing, (6) proper work order step sequencing, and (7) proper use of the “Risk and Controls” section of the work orders.
- D. **Additional improvements to the HaRPS data output** are expected, which will further streamline the controls applicable to specific tasks within the work control document. PDD-1004, LRD-14005, LWP-21220, and LWP-6200 will be reviewed and revised as necessary to clearly demonstrate roll down of requirements to the worker.
- E. **Training for LWP-21220 and LWP-6200** will be reviewed and revised to strengthen expectations for (1) performance of work in accordance with the written work control document, (2) performance of workability walk downs, and (3) use of lessons learned and feedback.
- F. **Enhancement of ISMS to include a fourth, “Personal Level”** to the existing Laboratory, Facility, and Activity levels of ISMS implementation. The personal level further defined to align with the 10 Nuclear Safety Traits as promoted by the INPO in conjunction with Attachment 10 of the ISMS DOE G 450.4-1C and promoting a Safety Conscious Work Environment (SCWE).
- G. **Team established to evaluate proper use of laboratory notebooks.** A team has been formed to address issues identified in the management review of MCP-2875, “Proper Use and Maintenance of Laboratory Notebooks.” The team is looking at content, ease of use, and delivery of the MCP. The team has met several times and should have revisions completed early in 2014.
- H. **Human Subjects program personnel are participating in a DOE complex-wide initiative to adopt a new electronic Institutional Review Board (IRB) submission system.** This system should reduce risk in compliance with human subject requirements as it will automatically send reminders to PIs when a continuing review is coming due, when training is lapsing, etc. All information on INL IRB reviews will be online and will make reporting to DOE-HQ much easier and more efficient. Current plans are to begin implementation of the new system early in 2014.
- I. **Procedure implementation evaluation effort.** Based on internal assessments, trending of environmental issues entered into ICAMS and LabWay continues to indicate that procedure implementation is a cause for a high percentage of issues. Deeper investigation is underway to determine whether instructions can be improved to reduce or eliminate these issues.
- J. **Environmental checklist evaluation effort.** Based on internal assessments and customer feedback, additional attention needs to be given to the review of second-tier environmental checklists to assure that they meet the customer’s requirements.

3. ISMS DECLARATION

INL reports on the Safety Performance Objectives Metrics and Commitments (SPOMC) quarterly through the management system quarterly assurance reports that are posted to the CAS portal for DOE-ID's review. INL Management Systems (MS) are based on the principle of continually improving in key areas that impact the sustainability of the business, encompass sharing, and promote process optimization, management focus, and disciplined management thinking. Each Management System Lead (MSL) has the responsibility of evaluating performance and improvement to their management system with respect to safety related metrics, and to work closely with their DOE counterpart and keep them informed when changes to the metrics within the reports are made. This transparency is intended to improve the understanding of safety related metrics and the communications between MSLs and DOE-ID.

The majority of the INL's MSs play a role and facilitate the integration of safety core functions and guiding principles throughout INL's operations and processes that manage the Laboratory. However the key management systems that play a significant role and have established safety related metrics for continuous improvement are:

- Asset Protection
- Contractor Assurance
- Quality Assurance
- Occupational Safety and Health
- Radiation Control
- Environmental
- Work Management.

As previously mentioned in the body of the report there have been many notable improvements within the various MSs during FY 2013. MSLs were tasked in FY 2013 to scrutinize the content of their safety related metrics to ensure that they are measuring key elements and functions applicable to INL's successful implementation of safety related improvements. Benchmarking activities have been completed in this endeavor and metric improvement continues to be a priority.

In addition to improvements in the quality of metrics and critical evaluation of performance as documented in the content of quarterly assurance reports, each of the MSLs have demonstrated better understanding of the application and implementation of ISM within their MS by being more self-critical to improve their efforts to protect people, environment, and assets. MSs continue to trend and analyze data that promotes continual learning used to prevent events from recurring in the future.

In FY 2013 each MSL provided summary evaluations of their respective management system's health and performance for FY 2013 to the ISMS program manager. These evaluations included accomplishments, opportunities for additional improvements, and ongoing initiatives. The review of these evaluations demonstrated sustained commitment to SPOMC and effective ISM implementation at the INL.

For further detail and analysis of the MSs, visit the CAS portal quarterly assurance reports.

Conclusion-The summary of actions and metrics discussed throughout this review was not meant to be an all-inclusive list of everything that happens at the INL to ensure effective implementation of ISM at all three levels (laboratory, facility, and activity). It is only a snapshot of recent initiatives and improvement opportunities learned from assurance activities, metrics, and events. Individually the items that have been discussed are only pieces, but collectively, they demonstrate rigorous implementation of an effective ISMS program resulting in:

1. Continued decreasing injury and illness rates
2. Reduced RadCon incidents and exposures
3. Less Initial Notification Reports (INRs)
4. Increased Management presence in the field
5. Improved expectations of Roles, Responsibilities, Authorities, and Accountabilities.
6. Improved work packages, work control processes, and conduct of operations and maintenance
7. Improved employee involvement and safety culture
8. Improved trending capabilities
9. Improved training activities.

INL actions performed in FY 2013 have driven immediate improvement in some cases, and have long-range goals of continual improvement. BEA strongly supports ISMS functions and principles and is committed to continual improvement.

Overall Performance Rating – *Effective, Continually Improving*